

# THE SIMULIIDAE DESCRIBED BY N. BARANOV AND THEIR TYPES (DIPTERA)



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## SYNOPSIS

An alphabetical catalogue is given of the 43 species and infraspecific taxa of Simuliidae described by N. Baranov, with an account of all existing type-material on which the names are based. Sixteen lectotypes are designated. Each species-group taxon is assigned to its correct genus-group segregate after type-examination, and previously established synonymies are given; no new synonyms are involved. A complete bibliography of Baranov's works on Simuliidae is included, although most of them are not taxonomic.

## INTRODUCTION

THE extensive taxonomic and other investigations on the European Simuliidae made in the past 25 years, since the last war, have taken little account of the work of Mr Nikola Baranov between 1924 and 1942 on the black-fly fauna of Yugoslavia, and even Rubzov's (1959-1964) comprehensive monograph of the Palaearctic Simuliidae mentions only nine of the 43 species-group taxa that Baranov described. It is quite likely that some of Baranov's names apply to, and have priority over, taxa and names that have been proposed recently by other authors, though it will be some time before all the various synonymies among European black-flies can be unmasked.

The European literature of simuliidology is bedevilled with nomenclatural difficulties arising from too much neglect of the early names, misidentification through failure to study the types, and a lack of attention on the part of too many workers to the elements of nomenclature. Before many of the problems of identity and synonymy can be resolved it will be necessary to make extensive studies of the types, and a preliminary need is for an up-to-date catalogue of Palaearctic black-flies which includes the basic data on all the primary types and their whereabouts. This is being prepared at the moment by one of us (R.W.C.), and the present joint paper on Baranov's Simuliidae has two main purposes: to make known to other simuliidologists what material still exists in Baranov's collection and to clarify a number of matters concerning Baranov's Simuliidae in advance of the projected catalogue.

Most of Baranov's work in Yugoslavia during the 1920's and 1930's was concerned with the infamous 'Golubatz fly', *Simulium columbaczense* (Schönbauer) [name now a synonym of *S. colombaschense* (Fabricius)], which breeds along a stretch of the river Danube and becomes an appalling and notorious biting pest in periodical outbreaks, and Baranov himself well documented his extensive studies on this pest (see references). It was as a by-product from this main work that Baranov discovered and named the various species, subspecies, forms and races of *Simulium* Latreille s.l. (numbering 43 taxa in all) that he described; all were found in Yugoslavia and most were described from the states of Serbia and Macedonia.

Baranov made a personal collection of Yugoslav Simuliidae which consisted both of pinned adult flies (many of them reared from pupae and kept with their associated pupal pelts) and of adults and early stages preserved in alcohol, and this collection originally contained all the type-specimens on which his taxa were based. Unfortunately part of the collection, including all of the alcohol material, was lost at the end of the second world war, when Baranov was experiencing great difficulties as a displaced person, and has never been found again. (Our information on this point was obtained from Mr Baranov himself, both from conversations during the preparation of this paper and from a letter that he wrote to Mr Guy Shewell, of the Division of Entomology, Canada Department of Agriculture, in 1954 when the purchase of the remainder of his collection was being negotiated.)

The surviving part of Baranov's collection consists of adult material, often with associated pupal pelts, and is in the Canadian National Collection (hereafter abbreviated CNC). It was bought from Baranov in 1954 by the Canada Department of Agriculture and is now housed as part of the CNC in the Entomology Research Institute at Ottawa, Canada. All extant types of Baranov's taxa of Simuliidae are in this collection except for some paralectotypes deposited in the British Museum (Natural History) (text-abbreviation: BMNH) by an exchange made whilst this paper was in preparation. Baranov himself did not exchange specimens with other workers or deposit 'cotypes' in other museums (Baranov, pers. comm., and i. litt. to Shewell as follows: 'Your assumption that in no other collection [besides his own] these cotypes are contained is correct. Since I had to stop my work before I had finished I never started to exchange material with anybody in this line [Simuliidology]').

Baranov's letter to Shewell, referred to above and dated 4th March 1954, contains some helpful and definite information on the fate of several of the types that are lost, and we have accordingly cited this letter from time to time in the body of this paper: the text notation 'Baranov i. litt. to Shewell' refers always to this particular letter.

Baranov described 43 nominal taxa of species-group Simuliidae, and five genus-group taxa. The latter, viz. *Danubiosimulium*, *Echinosimulium*, *Pseudodagmia*, *Pseudonevermannia* and *Pseudosimulium*, are discussed by Stone (1963) and are not considered further in this paper. Baranov's collection in Ottawa contains specimens labelled as primary types of seven species-group entities, in addition to the still extant types of the described taxa, but we are now convinced that the seven names attached to these extra 'types' were never actually published (since they are



manuscript names we are not recording them in print). Baranov (i. litt. to Shewell), when asked about these names in 1954, implied that they had been published although he was not able to recall the references, and because of the possibility that they could have appeared in print in one of the little-known Yugoslav journals and been overlooked we have made extra-careful searches for them. No trace of any of these seven names has been found from a page-by-page search through all the works on Simuliidae of which Baranov was sole or conjoint author, and our bibliography of these works is, we believe, complete; we conclude, and Mr Baranov (personal communication with R.W.C.) now thinks this must be so, that Baranov had intended to publish the seven names but never actually did so (either because no manuscripts on the seven taxa were completed or because they went astray after completion, perhaps during the difficult war years). Of the 43 published taxa it should be explained that, for reasons given where appropriate in the text, we regard *Odagnia ruficornis* and *O. ruficornis prima* as names applying to a single nominal taxon, and likewise *Wilhelmia stylata* and *W. stylata prima* as likewise applying to one taxon only; three of Baranov's names, viz. *barensis*, *intermedia* and *mazedonica* were overlooked by Smart (1945) and omitted from his catalogue of world Simuliidae.

When originally described Baranov's 43 taxa comprised 11 species, six subspecies, 24 forms (plus two uses of f. *prima* for the nominate subdivision of species *ruficornis* and *stylata*) and two ecological races. Some of these taxa were well and formally described, but for others there is only the bare minimum of descriptive matter—often not set out as a formal description—to make the names nomenclaturally available. Nevertheless all of them have, in our opinion, status in nomenclature (none can be clearly interpreted as infrasubspecific in the meaning of the *International Code of Zoological Nomenclature*, 1961, for the reasons given below), and are available names (though some, as annotated in the text, are primary homonyms or secondarily homonymous in *Simulium* s.l.). Baranov himself fixed types for all his taxa, and intended that his various forms and races should have status in nomenclature as much as his subspecies and species. He divided species either into subspecies or into forms (or in the case of *S. columbaczense* into geographically separate ecological races), but his subspecies were never themselves divided into forms, and there is no instance in which any of his forms is infrasubspecific; furthermore the form names were bestowed on geographically allopatric entities (see, for instance, Baranov's 1937a segregation of forms in the 'Vardar-Formenkomplex' and the 'Morava-Donau-Formenkomplex') not different in kind from his subspecies, and indeed he sometimes referred to his subspecies as forms without discrimination. Hence all of his form names, as none is clearly infrasubspecific, have nomenclatural status under the *Code* and are based upon the types. Similarly the two entities originally described as ecological races (*litorale* and *profundale*) are here deemed to have status under the *Code* since these names cannot be interpreted as infrasubspecific (because the specific taxon to which they belong was not divided into subspecies, because Baranov himself variously referred to them as races or forms, and because they were described as geographically as well as ecologically separated taxa).

One other matter concerning Baranov's form names requires mentioning.

Baranov used each of the names *prima* and *secunda* five times for supposedly distinct forms within five species, all of the uses of these names being published in a single paper (Baranov, 1926b). In practice the existence of five *prima* homonyms and five *secunda* homonyms creates no difficulty, because (with the exception of one use by Rubzov, 1962) later authors have not regarded Baranov's *prima* and *secunda* entities as having taxonomic validity; Smart (1945) merely listed them under the appropriate species name. In the present paper we draw attention to the homonymy and point out that future authors may need to provide replacement names in the improbable event that they should consider some of Baranov's *prima* and *secunda* forms worthy of named rank. There is as yet no determined senior homonym among the uses of *prima*, but Rubzov (1962 : 412) has given *Wilhelmia equina secunda* Baranov full specific rank and we consider that Rubzov's citation determines which of the five uses of *secunda* is to be held as the senior homonym.

In the body of this paper we enumerate all of Baranov's described species-group taxa in alphabetical order of their original combinations and give details of the types. For each name the entry is arranged to show the following information in the order indicated:-

Name; author; date and page reference of original publication; status and sex of primary type (or syntypes); present lectotype designation (if necessary); locality and date of primary type; type-depository.

Number and sex of paralectotypes or paratypes, with data and depository information as for primary types.

Explanatory comments or annotations when necessary.

Genus-group assignment for each name where possible, and annotations on correct placement.

For the localities we have always cited a larger unit first, i.e. state before town or village, town before stream name, and we have always indicated the state (e.g. Serbia or Macedonia) for each locality even though Baranov often omitted this information from the original publication. Baranov, in publication and on labels, used the spelling Skoplje for one of his important localities, but we have thought it better to use the English spelling Skopje. Baranov variously used either the Croatian spelling Golubac or the German spelling Golubaz; we have consistently used the former spelling, which accords with English transliteration from Serbian.

Whilst working through Baranov's collection in conjunction with the publications containing his descriptions we have found a number of anomalies. Most of the specimens in the collection bear Baranov's labels either as 'Typus' or as 'Cotypus', but there is not always complete agreement between the status indicated by Baranov and that which is apparent from the description; there are some discrepancies between the sex of the specimen labelled as type and that described in publication, and there are several instances in which specimens labelled as types by Baranov cannot have any type-status because they were not collected (as indicated by the data labels) until some time after the description had been published. We have judged each case of discrepancy individually, and have determined the status of types in doubtful cases after careful scrutiny of the original publications; in some

instances it has seemed reasonable to accept certain specimens as being original syntypes in the light of some piece of information contained somewhere in Baranov's text, but in other instances it has been considered that the evidence does not warrant inclusion of certain specimens in the syntypic series (e.g. too great a conflict between cited dates or localities or sex taken in combination). Any discrepancies between specimens and descriptions of the kind mentioned have been fully annotated. In the case of syntypic series we have ordinarily labelled and designated the specimen labelled 'Typus' by Baranov as the lectotype, provided there is no discrepancy (no lectotype designations have previously been published for Baranov's simuliid taxa and all lectotypes mentioned are newly designated).

Baranov published several figures of the male hypopygium of various Simuliidae, including some of his new taxa, but all of his slides are believed lost; there are none with the main collection in CNC.

Baranov's species-group taxa of Simuliidae were described in nine taxonomic papers, but Baranov published many other papers on the Simuliidae of which some contain keys and other taxonomic information. No complete bibliography of Baranov's works on black-flies has up to now been published, even Rubzov's (1959-1964) monograph including little more than half the relevant references, so we have thought it useful to bring together such a bibliography in the present paper. Our attempts to trace the manuscript names (already referred to) in print obliged us to examine every one of Baranov's works on the Simuliidae, many in obscure publications overlooked by recording and abstracting journals, and rather than 'waste' the bibliographic information obtained we have assembled it as a full bibliography in the references at the end of this paper. To the best of our knowledge this bibliography is complete.

The bibliography contains in all 34 publications of Baranov concerned with Simuliidae (30 in which he was sole author and 4 in which he was co-author). Out of this total of works only 11 titles are to be found in the *Zoological Record*, and only 20 are recorded in the *Review of Applied Entomology*, Series B, Medical & Veterinary (17 with abstracts and three by title only). This does not, however, reflect badly on these recording publications, for two reasons: firstly, several of the publications are in the nature of instruction pamphlets or semi-popular accounts of the Golubatz fly (not strictly scientific papers), and, secondly, many of the papers were published in local Yugoslav journals which are either not held in any British library or are held in incomplete sets (e.g. lacking volumes for the second world war years). Although so many of the papers are in rather inaccessible publications it has been possible for one of us (R.W.C.) to see thirty of them in the original, and the remaining four in photocopy, by bringing copies together from the following sources: personal gift and loan from Mr Baranov himself of a few publications still remaining in his possession; library holdings of British Museum (Natural History), Commonwealth Institute of Entomology (which holds many reprints, including most of the important papers published in *Veterinarski Arhiv*), and of the Commonwealth Bureau of Animal Health, Weybridge; and photocopies from the Nacionalna i Sveučilišna Biblioteka, Zagreb, the library of the Veterinary Faculty, Institute of Medical Researches, Belgrade, and the library of the U.S. Department of Agricul-



ture, Washington, D.C. References from all sources have been cross-checked against a manuscript of his simuliid papers prepared by Baranov himself in the 1950's (copy supplied to us by Dr Alan Stone), and with Mr Baranov's recollections at the present time of his various publications. The manuscript list referred to was prepared by Mr Baranov largely from recollection, when he was living in Pakistan without access to literature, and as a result there are a few minor omissions and errors; nevertheless it has been of such immense value to us in providing leads to many of the lesser known works (which are not cited in the recording journals and could easily have been overlooked) that we take this opportunity of recording our indebtedness to this list.

Finally in this introduction we should note that we have consistently used the spelling Baranov with terminal 'v' throughout the paper, though Baranov sometimes used the alternative 'ff' ending to his name (especially in German-language publications).

#### ACKNOWLEDGEMENTS

It gives us great pleasure to acknowledge the generous help that we have received from Mr Nikola Baranov, including valuable information on his work in Yugoslavia and on his simuliid collections and publications, and the generous gift or loan of copies of some of his works. One of us (R.W.C.) is also most grateful to Mr and Mrs Baranov for their kindness and hospitality during a visit (in January, 1971) to their home in Shepherd's Bush, West London, when many of the points that had arisen in the preparation of this paper were helpfully discussed.

We are grateful also to the following persons who helped us by providing photocopies of various publications: Mr Milutin Ivanušić, National and University Library, Zagreb; Dr Alan Stone, U.S. Department of Agriculture, Washington, D.C.; and Dr Vera Zivković, Veterinary Faculty, Institute of Medical Researches, Belgrade. We thank Dr Zivković also for helpful information on Baranov's publications and for confirming that no specimens from Baranov's material are in Yugoslav collections. Dr Curtis Sabrosky very kindly supplied us with information on Baranov's son which enabled us, in turn, to establish contact with Mr and Mrs Baranov. Miss Pamela Gilbert, of the Department of Entomology Library, British Museum (Natural History), helped us considerably with the unusually obscure references involved in this work, and in obtaining photocopies from other libraries, and for this we are grateful.

#### SHORT BIOGRAPHY OF N. BARANOV

Nikola Baranov was born at Orël in Russia in 1887. He grew up in Nishni Novgorod, where his father was director of the grammar school, and graduated from the Natural History Faculty of the University of Moscow. He then specialized in applied entomology, studying under Professor Kulagin at the Agricultural Academy in Petrovsko Rasumovsko (near Moscow), and—after completing the course in applied entomology—was appointed entomologist to the Agricultural Station at Kursk in southern Russia. Here he was working as an agricultural entomologist at the time of the Russian revolution in 1917.

In the autumn of 1919 Baranov was forced to leave Kursk because of the civil war. He went first to the Crimea, but decided to leave Russia finally from there in the autumn of 1920. He settled in Yugoslavia, and in May 1921 was appointed to the staff of the Agricultural Station (Poljoprivredne Stanica) at Topčider, Belgrade, where he started entomological work on a variety of agricultural pest problems. He soon began to work in particular on the Acridoidea, especially the Moroccan locust pest *Dociostaurus maroccanus* (Thunberg). His first scientific papers appeared in 1924 and 1925 and were concerned with the morphological variability and natural enemies of this locust, and with the classification of Serbian Acridoidea by using the male genitalia. As a result of studying the dipterous parasites of *Dociostaurus* he acquired an interest in Sarcophagidae and Tachinidae, of which (in later years) he described many new genera and species (see Sabrosky & Crosskey, 1969, 1970).

After five years at the Topčider station Baranov took the post of entomologist at the Institute of Hygiene in Skopje (Macedonia) in 1926, from where he was shortly transferred to the Institute of Hygiene at Zagreb (Croatia) when this was newly opened in 1928. In the following year a lady assistant from Vienna was appointed to help Baranov with his entomological work, and they were married in 1931; from this time on Baranov was greatly aided in his work by Mrs Baranov, and it is of special interest to note that it was she who drew nearly all the figures in his papers and put into German those papers which he published in this language. Baranov began to work upon the Simuliidae whilst still at Topčider because of the great importance as a livestock pest of the Golubatz fly (*Simulium colombaschense* (Fabricius), syn. *columbaczense* Schönbauer), and later whilst at the Institutes of Hygiene at Skopje and Zagreb he extended his interests to the whole Yugoslav simuliid fauna; during the 1930's the Veterinary Faculty at Zagreb supported his well documented studies on the Golubatz fly (for further information see Introduction). Baranov's duties with the Institutes of Hygiene were many and varied and the Golubatz fly was only one aspect; in addition he worked on domestic flies of hygienic importance, including the control of house-flies and malarial mosquitoes. For many years, in conjunction with the Agricultural Station in Zagreb, he helped to organize the control measures against insect pests of olive trees in the coastal areas of Dalmatia.

Baranov continued to work with the Institute of Hygiene at Zagreb until 1944, when he left Yugoslavia and his entomological work ended. Immediately after the second world war Baranov was, for a time, a displaced person, but luckily throughout this difficult period he was able to keep most of his entomological collections intact, and to take them with him in 1948 to the newly-formed state of Pakistan (where Mrs Baranov was offered employment and Baranov was able to settle). The collections were later sold, the Simuliidae (plus some Culicidae and Muscidae) going to the Canada Department of Agriculture, Ottawa in 1954, and the Tachinidae and Sarcophagidae to the United States National Museum, Washington, D.C. in 1960.

In 1962 Baranov came to England, where—now aged 84—he is living in retirement in London.

We take this opportunity of thanking Mr and Mrs Baranov for providing much



of the information for this short account and of extending our best wishes to them for the future.

#### BARANOV'S NOMINAL SPECIES-GROUP TAXA OF SIMULIIDAE AND THEIR TYPES

***Danubiosimulium columbaczense*** (Schoenbauer), form ***intermedia*** Baranov, 1939a : 110, 118-120 (Croatian), 122-125 (German). Syntypes ♂, ♀, pupae, larvae, YUGOSLAVIA: Serbia, R. Danube, near Sip Canal, iv. 1938 (not located, presumed lost).

Baranov proposed the name *intermedia* for a form of *columbaczense* (Schoenbauer) in which the adult flies were intermediate between those of *columbaczense* race *litorale* Baranov and *columbaczense* race *profundale* (being large like the former but having a metallic sheen like the latter) and emerged from the Danube in the geographical area of the Sip Canal earlier in the year than race *litorale*. Apart from adults Baranov mentioned larvae and pupae. The work containing the name *intermedia* has scattered mentions of characteristics differentiating the taxon, although there is no formal description, and the name is nomenclaturally available. No original type-material or any other material pertaining to *intermedia* has been located and the syntypic specimens are presumed lost.

The name *intermedia* appears in the *Rev. app. Ent.* (B) 27 : 85-86 but was overlooked by Smart (1945) and omitted from his catalogue of world Simuliidae. It does not appear in Rubzov (1959-1964). Probably no present day taxonomist would regard *intermedia* as a taxonomic entity requiring a formal name and the name is best regarded simply as a synonym of *Simulium columbaczense* (Schoenbauer) (= *S. colombaschense* (Fabricius)). It is a junior secondary homonym in *Simulium* s.l. of *S. intermedium* Roubaud, 1906, and would in any case, therefore, require a replacement name if applied to a valid taxon.

***Echinosimulium echinatum*** Baranov, 1938a : 313 (Croatian), 323 (German). Holotype pupa, YUGOSLAVIA: R. Danube (not located and presumed lost).

Baranov (1938a) described the larva and the pupa of this species and stated (Croatian text, p. 316, German text, p. 325) that the pupal description was based on the holotype. It is known that Baranov made slides of larval specimens for the larval description but these are not with the Baranov collection in CNC and are presumed lost; if later located, the larvae will have paratype status.

Rubzov (1962 : 259) places *echinatum* in the segregate *Titanopteryx* Enderlein (= *Byssodon* Enderlein) and this placement is undoubtedly correct, though whether subspecific status within *maculatum* Meigen is justified appears doubtful.

***Nevermannia angustitarsis*** (Lundström), form ***mazedonica*** Baranov, 1926b : 185, 193. Syntypes ♀, YUGOSLAVIA: Macedonia, Hanrijevo near Skopje; Serbia, Tuman (lost).

The type-material of this form was preserved in alcohol and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell). A ♀ specimen from Skopje, 4.xi.1926, is in Baranov's collection but has no type-status, as it was collected after publication of the name.

The name remains enigmatic. Smart (1945) omitted the name *mazedonica* from his world catalogue of Simuliidae by oversight.

***Nevermannia aurea*** (Fries), form ***prima*** Baranov, 1926b : 185, 192. Syntypes ♂, ♀, pupae, larvae, YUGOSLAVIA: Macedonia, Hanrijevo near Skopje (lost).

The type-material of this form was preserved in alcohol and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell).

The name remains enigmatic and is a secondary homonym in *Simulium* s.l. of *prima* Baranov (1926b, forms of *equina* L., *ornata* Meigen, *ruficornis* Baranov and *stylata* Baranov).

*Nevermannia aurea* (Fries), form *secunda* Baranov, 1926b : 185, 192. Syntypes ♂, YUGOSLAVIA: Macedonia, Hanrijevo near Skopje (lost).

The type-material of this form was preserved in alcohol and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell); the original publication cited only the adult male, but it is possible that Baranov also had the female and immature stages at the time of description (as he did for *aurea* f. *prima*, see above). The name remains enigmatic and is a secondary homonym in *Simulium* s.l. of *secunda* Baranov (1926b, forms of *equina* L., *ornata* Meigen, *ruficornis* Baranov and *stylata* Baranov).

*Odagmia croatica* Baranov, 1937a : 263 (Croatian), 274 (German). LECTOTYPE ♀, by present designation, YUGOSLAVIA: Croatia, Zagreb, 23.iii.1931 (CNC).

Paralectotypes: 1 ♂, 3 ♀, same data as lectotype (♂, 2 ♀ in CNC; one ♀ in BMNH).

Baranov did not mention the number of specimens in the Croatian description (pp. 263–264), but mentioned one male and four females at end of the German description (p. 275); the type-specimens cited above therefore comprise the whole type-series. The paralectotypes are in poor condition and the male is on the same mount as one of the females.

*O. croatica* is not placed by Rubzov (1959–1964); it is here confirmed from lectotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 503) gives the publication date of this name as 1936 in error.

*Odagmia croatica* Baranov, form *decolorata* Baranov, 1937a : 264 (Croatian), 276 (German). LECTOTYPE ♀, by present designation, YUGOSLAVIA: Croatia, Zagreb, 30.iii.1931 (CNC).

Paralectotypes: 3 ♂, 3 ♀, same data as lectotype (2 ♂, 2 ♀ in CNC; 1 ♂, 1 ♀ in BMNH).

Baranov mentioned both sexes in the original descriptions but did not state the number of specimens; all the above-listed specimens are considered to be original syntypes as their data fully conforms with the original publication.

*O. croatica* f. *decolorata* is not placed by Rubzov (1959–1964); we confirm from lectotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 503) gives the publication date of this name as 1936 in error.

*Odagmia croatica* Baranov, form *nigrina* Baranov, 1937a : 264 (Croatian), 275 (German). LECTOTYPE ♀, by present designation, YUGOSLAVIA: Croatia, Zagreb, 23.iii.1931 (CNC).

Paralectotypes: 2 ♂, 2 ♀, same data as lectotype (one of each sex in CNC and BMNH).

Baranov did not mention the number of specimens in the Croatian description (p. 264), but mentioned two males and three females at the end of the German description (p. 276); the type-specimens cited above therefore comprise the whole type-series. All of them lack the abdomen.

*O. croatica* f. *nigrina* is not placed by Rubzov (1959–1964); we confirm from lectotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 509) gives the publication date of this name as 1936 in error.

*Odagmia (Pseudodagmia) kondici* Baranov, 1926a : 161. LECTOTYPE ♀, by present designation, YUGOSLAVIA: Serbia, Tuman, 9.vi.1925 (CNC).

Paralectotypes: 3 ♀, same data as lectotype, on same mount (CNC). 1 pupal exuvium, YUGOSLAVIA: Serbia, Golubac, 27.v.1925 (CNC).

Baranov described this species from both sexes, pupa and larva. We have not located any male or larval syntypes and presume these to be lost. The CNC collection contains (from Baranov's collection) specimens of *kondici* from Macedonia (2 ♂ and 6 ♀ from Skopje and one ♀ from Treska) but these specimens have no type-status; they were collected in November, 1926 (Treska specimen) and July, 1927 (Skopje specimens), after the original description had been published.

This species is assigned by Rubzov (1963 : 506), under the mis-spelling *condici*, to *Tetisimulium* Rubzov, and we confirm this placement after examination of the lectotype.

***Odagmia ornata*** (Meigen), form ***anderlicecki*** Baranov, 1937a : 263 (Croatian), 274 (German). Holotype ♂, YUGOSLAVIA: Serbia, Golubac, Dedinje stream, 24.v.1936 (CNC).

Paratypes: 1 ♂, 6 ♀, same data as holotype (CNC). 3 ♂, 3 ♀, same data as holotype, except only year date 1936 (2 ♂, 2 ♀ in CNC; 1 ♂, 1 ♀ in BMNH). 5 ♂, 3 ♀, YUGOSLAVIA: Serbia, Tuman, 17.v.1934 (CNC).

Baranov described this form from both sexes, but without stating the number of specimens. A single specimen was designated as 'Typus' in the original publication but without stated sex, and Baranov cited the type-locality as 'Dedinje-Bach bei Golubac'; we assume therefore that the holotype specimen was from the Dedinje stream, although this name does not appear on the holotype data label.

The CNC collection contains (from Baranov's collection) 5 ♂ and 3 ♀ specimens of *anderlicecki* collected at Tuman (Serbia) on 17.v.1934. This locality was cited in the original descriptions, though without date, and these specimens are considered to be paratypes.

*O. ornata* f. *anderlicecki* is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 500) gives the publication date of this name as 1936 in error.

***Odagmia ornata*** (Meigen), form ***babici*** Baranov, 1937a : 261 (Croatian), 273 (German). Holotype ♂, YUGOSLAVIA: Macedonia, Skopje, Vardar, 21.i.1927 (CNC).

Paratypes: 1 ♂, 1 ♀, same data as holotype, except ♂ without 'Vardar' cited (CNC). 1 ♀, same data as holotype, except date 30.x.1926 (CNC). 1 ♂, same data as holotype, except date 18.i.1927 (CNC); 2 ♀, same data as holotype, except date 18.xi.1926 (CNC and BMNH). 6 ♂, 2 ♀, same data as holotype, except various dates 1-23.ii.1927 (all in CNC except one ♂ with date 23.ii.1927 in BMNH). 2 ♀, same data as holotype, except date 26.v.1927 (CNC). 1 ♀, same data as holotype, except additional locality Glumovo near Skopje and date 12.iv.1927 (CNC).

Baranov described this form from both sexes, but without stating the number of specimens. A single specimen, without stated sex, was designated as 'Typus' in the original publication and the date given as '21.i.1927', no other date being mentioned. We accept all of the above-listed paratypes as having this status as they all come from the type-locality or nearby, but most of them bear dates not cited by Baranov in the description. Baranov cited the exact type-locality as 'Vardar von Skoplje bis zur Mündung der Treska', but this full data does not appear on any of the type-specimens.

*O. ornata* f. *babici* is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 501) gives the publication date of this name as 1936 in error.

***Odagmia ornata*** (Meigen), subsp. ***barensis*** Baranov, 1939d : 600 (Croatian), 601 (German). Syntypes ♀, YUGOSLAVIA: Montenegro, rivulet near Bar (formerly Antivari), viii.1938 (not located, presumed lost).

This subspecies was described from females (number of specimens not stated) reared from pupae, but the pupal stage was not itself described. No material of the taxon has been found, and the types are presumed lost.

The name *barensis* was overlooked by Smart (1945) and omitted from his catalogue of world Simuliidae. It is not placed by Rubzov (1959-1964) and remains enigmatic, though it may safely be presumed that it correctly applies to some species (probably *ornata*) of the genus-group segregate *Odagmia* Enderlein).

***Odagmia ornata*** (Meigen), form ***bartulici*** Baranov, 1937a : 262 (Croatian), 274 (German). Holotype ♂, YUGOSLAVIA: Serbia, Donji Milanovac, 6.v.1936 (CNC).

Paratypes: 1 ♂, 4 ♀, same data as holotype (♂, 3 ♀ in CNC; 1 ♀ in BMNH). 1 ♀, YUGOSLAVIA: Serbia, Golubac, 1.vi.1924 (CNC); 1 ♀, same locality, date 20.v.1925 (CNC); 1 ♂, 2 ♀, same locality, date 30.vi.1925 (CNC). 2 ♂, without data (with Baranov's name labels, paratype status presumed).



Baranov described this form from both sexes, but without stating the number of specimens. A single specimen, without stated sex, was designated as 'Typus' in the original publication and the date given as '6.v.1936'; the type-locality was given as 'D. Milanovac (der Bach über welchen der Weg von D. Milanovac nach Greben führt)'. Baranov also mentioned the locality 'Golubac' but without giving dates for the specimens from this locality (which have paratype status).

*O. ornata* f. *bartulici* is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 501) gives the publication date of this name as 1936 in error.

*Odagmia ornata* (Meigen), form *borcici* Baranov, 1937a : 261 (Croatian), 273 (German). Holotype ♀ [wings missing], YUGOSLAVIA: Macedonia, Skopje, 17.x.1926 [publ. as 1.xi.1926] (CNC).

Paratypes: 5 ♀, same data as holotype, except date 1.xi.1926 (CNC). 1 ♂, same data as holotype, except date 3.vii.1926 (CNC). 1 ♀, same data as holotype, except date 5.viii.1926 (CNC). 1 ♂, same data as holotype, except date 11.ix.1926 (CNC). 1 ♂, same data as holotype, except date 26.x.1926 (CNC). 1 ♂, 1 ♀, same data as holotype, except date 27.x.1926 (CNC). 1 ♀, same data as holotype, except date 30.x.1926 (CNC). 1 ♂, 1 ♀, same data as holotype, except date 4.xi.1926 (BMNH). 2 ♀, same data as holotype, except date 4.xi.1926 (CNC). 1 ♀, same data as holotype, except date 20.xi.1926 (CNC). 1 ♂, same data as holotype, except date 20.ii.1927 (CNC). 1 ♀, same data as holotype, except date 11.iv.1927 (CNC). 1 pupal exuvium, same data as holotype, except date 3.viii.1926 (CNC). 2 ♀, YUGOSLAVIA: Macedonia, Hanrijevo, 27.vi.1926 (CNC). 1 ♀, YUGOSLAVIA: Macedonia, Gradovzi, 1.x.1926 (CNC).

Baranov described this form from both sexes, but without stating the number of specimens. A single specimen, without stated sex, was designated as 'Typus' in the original publication and the date for this holotype was cited as '1.xi.1926'. A discrepancy exists in Baranov's collection concerning the holotype and its data: the collection contains five specimens on two mounts which have the date '1.xi.1926', but the single female specimen marked as 'Typus' by Baranov bears the date '17.x.1926'; it appears either that Baranov marked the wrong specimen as type or that he cited the wrong date in publication. The specimens having the date '1.xi.1926' exist as a pair on one mount and a trio on one mount, and it is unlikely that Baranov intended one of these specimens—not clearly separated from the others—to be 'Typus', and we consider it best to accept the specimen indicated as type by Baranov to be the holotype. We hold, therefore, that Baranov inadvertently cited the wrong date in publication for this specimen, and that the correct date for the holotype data is '17.x.1926'.

The form *borcici* is one of the 'Vardar-Formenkomplex', i.e. forms of *ornata* described from the geographical area of the Vardar river, Macedonia, and the specimens came from the Skopje and Hanrijevo environs according to Baranov's description. The specimens listed above, apart from the holotype, are all paratypes, but it should be noted that the CNC collection contains in addition two male and two female specimens under the name *borcici* from Baranov's collection that have the data 'Golubaz, 10.xi.[1]924'; as these specimens are from Golubac on the Danube in Serbia (outside the area of the 'Vardar-Formenkomplex') and this locality is nowhere mentioned in the original description, it is considered that they have no type-status.

*O. ornata* f. *borcici* is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 502, 510) listed *borcici* with the erroneous spelling *borici*, and (p. 502) gave the publication date as 1936 in error.

*Odagmia ornata* (Meigen), form *guelminoi* Baranov, 1937a : 262 (Croatian), 273 (German). Holotype ♀, YUGOSLAVIA: Serbia, Niš, 1.vi.1935 (CNC).

Paratypes: 3 ♂, 2 ♀, same data as holotype (CNC, all badly damaged). 22 ♂, 32 ♀, YUGOSLAVIA: Serbia, Pukovac, 1935 (CNC, except 2 ♂, 2 ♀ in BMNH). 6 ♀, YUGOSLAVIA: Serbia, Tuman, vi.1925 (CNC).

Baranov described this form from both sexes, but without stating the number of specimens. The single specimen listed above as holotype was designated as 'Typus' but without stated sex.

*O. ornata* f. *guelminoi* is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 505) gives the publication date of this name as 1936 in error.

***Odagmia ornata*** (Meigen) form *nikolici* Baranov, 1937a : 262 (Croatian), 274 (German). Holotype ♀, YUGOSLAVIA: Serbia, Niš, A [sic].iv.1935 (CNC).

Paratypes: 3 ♂, 1 ♀, same data as holotype (2 ♂, ♀ in CNC; 1 ♂ in BMNH). 4 ♂, 1 ♀, YUGOSLAVIA: Serbia, Kuršumljia, 10.iv.1935 (CNC).

Baranov described this form from both sexes, but without stating the number of specimens. The single specimen cited above as holotype was designated as 'Typus' but without stated sex. The three Serbian localities Niš, Pirot, and Kuršumljia, were cited in the description, but we have found no paratype specimens from the Pirot locality.

*O. ornata* f. *nikolici* is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 509) gives the publication date of this name as 1936 in error.

***Odagmia ornata*** (Meigen), form *prima* Baranov, 1926b : 184, 189. LECTOTYPE ♀, by present designation, YUGOSLAVIA: Serbia, Tuman, 5.iv.1925 (CNC).

Paralectotypes: 1 ♂, same data as lectotype (and on same mount) (CNC). 3 ♀, YUGOSLAVIA: Serbia, Golubac, 25.iv.1925 (CNC); 1 ♂, 2 ♀, same locality, date 26.iv.1925 (CNC); 1 ♂, 1 ♀, same locality, date 24.v.1925 (CNC).

This form was described from both sexes, pupae and larvae, but we have seen no immature stage syntypes and presume that these were lost with the rest of Baranov's alcohol material. No localities were cited in the original description, Baranov merely stating that the form was present everywhere ('Überall vorhanden'); all the above-listed specimens can be accepted as original syntypes. In addition the CNC collection contains, from Baranov's collection, another female specimen from the type-locality (Tuman) but with the collection date '26.iv.1927'; as this specimen was collected in the year after form *prima* was described it is not an original syntype.

*O. ornata* f. *prima* is not placed by Rubzov (1959-1964); we confirm from lectotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

The name is a primary homonym of *prima* Baranov (form of *Odagmia ruficornis*), and a secondary homonym in *Simulium* s.l. of *prima* Baranov (1926b, forms of *equina* L., *aurea* Fries, and *stylata* Baranov).

***Odagmia ornata*** (Meigen), form *savici* Baranov, 1937a : 262 (Croatian), 274 (German). Holotype ♂, YUGOSLAVIA: Serbia, Pirot, 12.iv.1935 (CNC).

Paratypes: 5 ♂, 2 ♀, same data as holotype (4 ♂, 1 ♀ in CNC; 1 ♂, 1 ♀ in BMNH).

Baranov does not specifically mention characters of the male in the original descriptions, but as males with the correct cited date (of which one is labelled by Baranov as 'Typus') and from the single cited locality stand with the females in his collection, and as it is known that all the other forms of *ornata* described in the 1937a work were based on both sexes, we consider it certain that the males were before Baranov at the time of description and that they should be considered to be original syntypes.

*O. ornata* f. *savici* is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 513) gives the publication date of this name as 1936 in error.

***Odagmia ornata*** (Meigen), form *secunda* Baranov, 1926b : 184, 191. Syntypes ♂, ♀, pupae, larvae, YUGOSLAVIA: Serbia, Tuman; & Macedonia, Skopje (not located and presumed lost).

Baranov described both sexes of this form, and also presumably had the immature stages before him at the time of description (as he stated 'Puppe und Larve sind der *O. ornata*



*prima* ähnlich'). No adult syntypes are present in Baranov's collection in CNC, and his alcohol material of immature stages was doubtless lost with the rest of his alcohol collection at the end of the war in Vienna. So far as we can tell, therefore, all type-material is lost.

However, it should be noted that Baranov's collection in CNC contains one female specimen from Skopje (one of the syntypic localities recorded by Baranov), but this specimen has the collection date '1.xi.1926'; the paper containing the original description of *secunda* was published in March, 1926, and this specimen cannot therefore be an original syntype (it is labelled as 'neotypus' by Baranov but was never published as such). The CNC collection also contains, from Baranov's collection, labelled in error as cotypes, one female and two male specimens named as *ornata* form *secunda* and having the data 'Golubac, 26.iv.1927'; these specimens also are not original syntypes as they come from a locality not mentioned in the original description (Baranov stated that he had specimens only from Tuman and Skopje) and were collected more than a year after the original description had been published.

*O. ornata* f. *secunda* is not placed by Rubzov (1959-1964); in the absence of type-material we cannot absolutely confirm that assignment to *Odagmia* is correct, but this may be presumed from the fact that *ornata* is type-species of *Odagmia* and Baranov's form *secunda* is really certain to belong to this genus-group concept.

The name is a primary homonym of *secunda* Baranov (form of *Odagmia ruficornis*), and a secondary homonym in *Simulium* s.l. of *secunda* Baranov (1926b, forms of *equina* L., *aurea* Fries, and *stylata* Baranov).

***Odagmia ornata*** (Meigen), form *zagrebiensis* Baranov, 1937a : 263 (Croatian), 274 (German). LECTOTYPE ♂, by present designation, YUGOSLAVIA: Croatia, Zagreb, 10.ii.1931 (CNC).

Paralectotypes: 1 ♂, same data as lectotype, except date 16.i.1931 (CNC). 1 ♂, same data as lectotype, except date 27.i.1931 (CNC). 1 ♂, same data as lectotype, except date 12.ii.1931 (BMNH). 1 ♀, same data as lectotype, except date 17.ii.1931 (CNC).

Baranov described this form from an unstated number of specimens of both sexes and did not designate a 'Typus'; present designation of a lectotype is therefore necessary. In the original publication Baranov gave the date range '10-17.ii.1931' and this agrees with data labels on most of the specimens in his collection; however there are two specimens with slightly different dates (viz. 16.i. and 27.i.1931) from that cited, but we nevertheless regard these as original syntypes (they were regarded as types by Baranov and all evidence suggests that they were available to him at the time of description).

*O. ornata* f. *zagrebiensis* is not placed by Rubzov (1959-1964); we confirm from lectotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 516) gives the publication date of this name as 1936 in error.

***Odagmia ruficornis*** Baranov, 1926b : 184, and ***O. ruficornis*** Baranov, form *prima* Baranov, 1926b : 184, 191. LECTOTYPE ♂, by present designation, YUGOSLAVIA: Serbia, Golubac, 27.v.1925 (CNC).

Paralectotypes: 2 ♂, same data as lectotype (CNC).

Baranov's (1926b) description of *Odagmia ruficornis* and its two forms (*prima* and *secunda*) is very confused, and some discussion is here necessary. The availability of these names rests upon the entry in the key on p. 184 of the original publication and on the descriptive matter on p. 191. The key entry reads:

'26 (29) Fühler des ♀ ganz hellrot . . . *ruficornis* n.sp.

27 (28) H.-Schenkel hell mit schwarzem Ende . . . *ruficornis prima* n.f.

28 (27) H.-Schenkel ganz hell . . . *ruficornis secunda* n.f.'

and the 'descriptive' entry reads:

'14-15. *Odagmia ruficornis prima* und *secunda* nn.ff. ♀♀. Ausser durch die roten Fühler unterscheiden sie sich von *O. ornata* durch eine hellere Körperfarbe und gleichmässige, gröbere und dichtere, mehr silberige Behaarung.

Ich habe beide Formen aus Tuman und Golubaz.'

The numbers 14 and 15 preceding the descriptive matter are serial numbers in a list of Simuliid species (the preceding number 13 referring to *Odagmia ornata nitidifrons* Edwards and the succeeding number 16 referring to *Odagmia kondici* Baranov). It is evident therefore that Baranov was proposing two separate taxa only (No. 14 and No. 15), differing in detail of leg colouring but together forming the new species *ruficornis* distinguished by its red antennae. From this it is plain that form *prima* was intended to be the typical or nominate form, and therefore that the species *ruficornis* is based upon the same type-material as form *prima*. Baranov's collection in CNC contains no specimens labelled as *prima* but does contain specimens labelled simply as *ruficornis*, and these specimens if accepted as syntypes are automatically types of both *ruficornis* and of *ruficornis* f. *prima*.

Unfortunately the status of the existing specimens in Baranov's collection is not absolutely certain, because all of them are males and Baranov's very deficient descriptive matter and key appear to mention only the female. It is well known, however, that Baranov must have had on many occasions specimens in front of him that he failed to note in publication, and that many types of discrepancy exist between cited information in his publications and the sex and data of specimens. In the case of *ruficornis* and *ruficornis* f. *prima* we here take the view that the three ♂ specimens in Baranov's collection and labelled by him as types are acceptable as being original syntypes, and we have designated a lectotype from them accordingly.

The name *ruficornis* Baranov is a junior secondary homonym in *Simulium* s.l. of *Simulium ruficorne* Macquart, 1838, and Smart (1944 : 133) published the replacement name *baracorne* Smart for the preoccupied *ruficornis* Baranov. Rubzov (1963 : 472-474) places *ruficornis* Baranov, under the name *Odagmia baracornis* (Smart), as a valid species of the *ornata*-group of *Odagmia*; we confirm from lectotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

***Odagmia ruficornis*** Baranov, form *secunda* Baranov, 1926b : 184. LECTOTYPE ♀, by present designation, YUGOSLAVIA: Serbia, Golubac, 27.v.1925 (CNC).

Paralectotype: 1 ♀, YUGOSLAVIA: Serbia, Negotin, ix.1924 (CNC).

Baranov (1926b : 191) only mentioned the localities Tuman and Golubac with reference to *ruficornis* forms *prima* and *secunda* but we think it reasonable to accept the specimen from Negotin (listed above as paralectotype) as an original syntype; Negotin lies in the same general area of north-east Serbia as the cited localities, and the specimen has Baranov's label as a type; we infer that the specimen was available to Baranov at the time of description.

*O. ruficornis* f. *secunda* is cited by Rubzov (1963 : 473) in the section headed 'Variabilität' under the name *Odagmia baracornis baracornis* Smart, and he evidently does not recognize separate status from the nominal taxon, *prima* (= *ruficornis* Baranov s.str., = *baracornis* Smart). We confirm from lectotype examination that *secunda* is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

The name is a primary homonym of *secunda* Baranov (form of *Odagmia ornata*), and a secondary homonym in *Simulium* s.l. of *secunda* Baranov (1926b, forms of *equina* L., *aurea* Fries, and *stylata* Baranov).

***Odagmia tenuitarsus*** Baranov, 1937a : 264 (Croatian), 276 (German). Holotype ♀, YUGOSLAVIA: Croatia, Zagreb, 9.iv.1929 (CNC).

This species is not placed by Rubzov (1959-1964). We confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

The name is a junior secondary homonym in *Simulium* s.l. of *Simulium tenuitarsus* Puri, 1933, and Smart (1945 : 528) has published the replacement name *baranovi* Smart for the preoccupied *tenuitarsus* Baranov.

Smart (1945 : 514) gives the publication date of *tenuitarsus* Baranov as 1936 in error.

***Simulium agnatum*** Baranov, 1937a : 259 (Croatian), 272 (German). Holotype ♀, YUGOSLAVIA: Serbia (CNC).

Paratype: 1 ♀, YUGOSLAVIA: Bosnia, Sarajevo, 1932 (CNC).

Baranov described this species only from the two female specimens cited above, which he designated as 'Holotypus' and 'Paratypus' respectively.

This species is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to *Simulium* Latreille s.str.

Smart (1945 : 500) gives the publication date of this name as 1936 in error.

***Simulium begbunaricum*** Baranov, 1924 : 65. Syntypes ♂ [? also ♀], YUGOSLAVIA: Serbia, Golubac & Kučevo & Zaječar (lost).

The type-material of this species was preserved in alcohol and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell). Although the type-material is lost the identity of *begbunaricum* is known from the footnote in Baranov's (1926b : 183) paper in which he stated that 'Die Art *S. begbunaricum* Bar. 1924 war eine Mischart und zerfiel in *equina*-Formen', a statement that we take clearly to imply that *begbunaricum* is a synonym of *Simulium equinum* (Linnaeus); this in turn confirms that the name applies to a species of the genus-group segregate *Wilhelmia* Enderlein, to which *equinum* belongs. The name is not given by Rubzov (1959-1964).

The original description of *begbunaricum* was published in Serbian by Baranov (1924) in the Yugoslav journal *Glasnik Ministarstva Poljoprivrede i Voda* (Vol. 2, No. 7, p. 65), but in the following year Baranov (1925) again described the species as new, citing it as 'n.sp.' in both a key in Serbian (pp. 6 & 7 of the 1925 paper) and in a German description (p. 10 of the 1925 paper). Smart (1945 : 501) overlooked the 1924 paper and cited the German description on p. 10 of the 1925 paper as the original description in error; Smart (loc. cit.) also inadvertently mis-spelt the name as *begbungaricum*. (This curious specific name alludes to the cliff-cave of 'Beg-Bunar' on the Danube, from which according to local superstition the infamous Golubatz-fly is supposed to emerge, and *begbunaricum* is the correct spelling.)

***Simulium brnizense*** Baranov, 1924 : 66. LECTOTYPE ♀, by present designation, YUGOSLAVIA: Serbia, near Golubac, Brniza [on label 'Brnjica'], 1924 (CNC).

Paralectotypes: none located, presumed lost.

The original Serbian description of this species appears to be based mainly on the male and includes a figure of the ♂ hypopygium, but Baranov makes it clear (especially in the second, German, description in 1925 mentioned below) that he had several specimens reared from pupae and these doubtless included females. We think it justified, therefore, to consider the one existing specimen in Baranov's collection in CNC that has the appropriate data (Brniza, 1924) and bears Baranov's label as 'Typus' as being an original syntype; we here designate it as lectotype. No male syntypes exist in Baranov's collection and these must be presumed lost.

The CNC collection contains specimens from Baranov's collection standing under the name *brnizense* together with the lectotype, but these additional specimens have no type-status, even though labelled as cotypes by Baranov (as none are from the type-locality and all were collected after the date of publication): they comprise four males and two females from Macedonia with the following data: 1 ♂, Treska, 9.xi.1926; 2 ♂, Vardar, 10.xi.1926; 1 ♀, Skopje, 11.xi.1926; 1 ♂, Skopje, 17.xi.1926; 1 ♀, Kabajep [spelling partly illegible, uncertain], 20.v.1927.

The original description of *brnizense* was published in Serbian by Baranov (1924) in the Yugoslav journal *Glasnik Ministarstva Poljoprivrede i Voda* (Vol. 2, pt. 7, p. 66), but in the following year Baranov (1925) again described the species as new, citing it as 'n.sp.' in both a key in Serbian (pp. 6 & 7 of the 1925 paper) and in a German description (p. 10 of the 1925 paper). Smart (1945 : 502) made a very confused entry for the species in his world catalogue of Simuliidae, giving two different spellings and two different references for the same species: his first reference to '*brizensis* [sic] Baranov (1924 : 66)' is in error for the spelling of the name but is correct for the bibliographic reference, but his second reference to '*bruigense* Baranov (1925 : 10)' is wrong for both spelling of the name and the reference. The reference



given by Smart (loc. cit.) against the mis-spelling *bruigense* refers to Baranov's German description of *brnizense* in the later (1925) paper and not to the first (original) Serbian description.

We confirm from lectotype examination that *brnizense* is correctly assignable to the genus-group segregate *Wilhelmia* Enderlein, where Baranov (1926b : 187, and subsequent publications) himself placed it. Rubzov (1962 : 401), following earlier authors and using the mis-spelling *brizensis*, places the name as a synonym of *falcula* Enderlein (a supposed subspecies of *equina* (L.)). There are several references in the literature to Baranov's name with the spelling *brizensis*, but the name alludes to Brniza near Golubac in Serbia and Baranov's original spelling is correct.

***Simulium columbaczense*** (Schoenbauer), race *litorale* Baranov, 1937b : 159, 164. LECTOTYPE ♂, by present designation, YUGOSLAVIA: Serbia, Golubac, 26.v.1936 (CNC).

Paralectotypes: 2 ♀, same data as lectotype, except date 22.v.1928 (CNC). 1 ♂, 20 ♀, same data as lectotype, except date 25.v.1928 (CNC). 9 ♂, 62 ♀, same data as lectotype (7 ♂, 60 ♀, in CNC; 2 ♂, 2 ♀ in BMNH).

Baranov did not publish a formal description of this race, but the name is nomenclatorially available from its first publication by Baranov (1937b) because characteristics are cited of the adult which differentiate *litorale*; all adult specimens cited above are acceptable as original syntypes and a lectotype is designated from them. Race *litorale* was named for those *Simulium columbaczense* (Schoenbauer) that breed in shallow waters of the Danube near Golubac, and in a later paper Baranov (1939a : 122) was very precise about the exact type-locality, stating that 'die typische Lokalität dieser Rasse [i.e. *litorale*] ist die Insel in der Nähe der Dampferanlegestelle bei Golubac'; this full detail is not however indicated on the type-material. Baranov referred to *litorale* as an ecological race ('ökologische Rasse') morphologically distinct from another ecological race (*profundale*) with which it was allopatric, since the *profundale* race occurred in the depths of the Danube at Donji Milanovac; as Baranov did not recognize subspecies of *columbaczense*, and as he referred *litorale* and *profundale* to be characteristic of particular geographical areas, the names of these ecological races are not interpreted as infrasubspecific in the terms of Article 45 (d) of the *International Code of Zoological Nomenclature*, 1961; they are therefore available species-group names with status under the *Code*.

No authors except Baranov have seen the need to recognize named 'races' of the Golubatz fly, and we concur in this view. The name *litorale* is a synonym of *Simulium colombaschense* (Fabricius) (syn. *S. columbaczense* (Schoenbauer)), the type-species of *Simulium* Latreille, without separate species-group status. Rubzov (1959-1964) omits the name *litorale*.

***Simulium columbaczense*** (Schoenbauer), race *profundale* Baranov, 1937b : 159, 164. LECTOTYPE ♀, by present designation, YUGOSLAVIA: Serbia, Donji Milanovac, 9.v.1936 (CNC).

Paralectotypes: 23 ♂, 26 ♀, same data as lectotype (21 ♂, 24 ♀ in CNC; 2 ♂, 2 ♀ in BMNH).

Baranov did not publish a formal description of this race, but the name is nomenclatorially available from its first publication by Baranov (1937b) because characteristics are cited of the adult which differentiate *profundale*; all adult specimens cited above are acceptable as original syntypes and a lectotype is designated from them. Race *profundale* was named for those *Simulium columbaczense* (Schoenbauer) that breed in the depths of the Danube near Donji Milanovac, and in a later paper Baranov (1939a : 122) was very precise about the exact type-locality, stating that 'die typische Lokalität ist bei Donji Milanovac, hinter den Traversen der Flussregulierung in einer Tiefe von 4-6 m, doch gibt es auch Fundorte von einer Tiefe die 20 m überschreitet'; this full data does not of course appear on the data on the adult syntypes, which are simply labelled as from D. Milanovac.

Baranov referred to *profundale* as an ecological race ('ökologische Rasse') morphologically distinct from another ecological race (*litorale*) with which it was allopatric, since the *litorale*

race occurred in the Danube in shallow waters near Golubac; the name *profundale* has status in nomenclature for the reasons outlined under *litorale* (see above).

No authors except Baranov have seen the need to recognize named races of the Golubatz fly, and we concur in this view. The name *profundale* is a synonym of *Simulium colombaschense* (Fabricius) (syn. *S. columbacense* (Schoenbauer)), the type-species of *Simulium* Latreille, without separate species-group status. Rubzov (1959-1964) omits the name *profundale*.

*Simulium djerdapense* Baranov, 1937a : 258 (Croatian), 270 (German). Holotype ♀, YUGOSLAVIA: Serbia, Golubac, 28.iv.1936 (CNC).

Baranov did not state the number of specimens in the original description, which was based solely on the female, and in the absence of any evidence to the contrary we accept the single ♀ specimen in Baranov's collection in CNC as holotype; its data agree with that cited in the original publication.

This species is not placed by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to the genus-group segregate *Odagmia* Enderlein.

Smart (1945 : 504) gives the publication date of this name as 1936 in error.

*Simulium reptans* (Linnaeus), form *calopum* Baranov, 1926b : 184, 189. LECTOTYPE ♀, by present designation, YUGOSLAVIA: Serbia, [River] Timok, ix.1924 (CNC).

Paralectotype: 1 ♀, same data as lectotype (CNC).

In the case of this nominal taxon there is serious discrepancy between the specimens that are labelled as types of *calopum* by Baranov in his collection in CNC and the information published in the original description, and it is necessary to annotate this in some detail. The entire description of *Simulium reptans calopum* n.f. (in Baranov, 1926b : 189) reads as follows:

'Diese Form unterscheidet sich von beiden vorhergehenden in beiden Geschlechtern durch die helleren Beine. Hypopygium des Männchens (Fig. 5) mit für *reptans* charakteristischem Griffel und starker Bürste. Ich habe sie aus dem Timok und dem Vardar und aus einem grösseren Bach neben Svilajnaz (Serbien).'

From this description two things are certain, firstly that the description was based on both sexes and secondly that the original (type) material was from the rivers Timok (in Serbia) and Vardar (in Macedonia), and from a stream at Svilajnaz (=Svilajnac) in Serbia. In all, Baranov's collection in CNC contains five ♂, seven ♀ and three pupal (exuviae) specimens, each bearing Baranov's cotype label, standing under *calopum*, but of these only two females are true original syntypes: these two specimens are from the river Timok, one of the cited type-localities, and have the collection date 'IX.1924', early enough to pre-date the original description.

The remaining specimens of *calopum* in the Baranov collection have no type-status, either because they are not from an original type-locality or because the collecting dates post-date the time of description (or because both date and locality conflict). Apart from the two Timok syntypes (here designated as lectotype and paralectotype) the data of the other specimens that lack type-status are as follows: Serbia, Golubac; 1 ♂, 1 ♀, date a. [sic] vi.1924; 1 ♂, date 22.iv.1925; 1 ♀, date 13.v.1925; 1 ♀, date 25.iv.1927. Serbia, Brniza; 1 ♂, date 30.iv.1927. Serbia, Tuman; 1 ♂, 1 ♀, date 26.iv.1927. Macedonia, Skopje; 1 ♀, date 11.iv.1927 (labelled as type by Baranov); 1 ♂, date 11.ix.1927; 3 pupal exuviae, date 9.iv.1927. The last-named locality, Skopje, is on the river Vardar (one of the type-localities cited by Baranov) and on the basis of locality alone the specimens from Skopje appear at first to be syntypes, but as the original description was published in 1926 (March) and the specimens were not collected until 1927 they cannot be original material; likewise the specimens from Golubac, Brniza and Tuman are not original syntypes as they are not from the type-localities and most of them also were collected after the time of description.

*S. reptans* f. *calopum* is not placed by Rubzov (1959-1964); we confirm from lectotype examination that it is correctly assignable to *Simulium* Latreille s.str.



*Simulium reptans* (Linnaeus), subsp. *glumovoense* Baranov, 1937a : 257 (Croatian), 270 (German). LECTOTYPE ♀, by present designation, YUGOSLAVIA: Macedonia, Skopje, Glumovo, 12.iv.1927 (CNC).

Paralectotypes: 2 ♀, same data as lectotype (CNC). 1 ♀ ex pupa (cocoon only remaining), YUGOSLAVIA: Macedonia, [River] Treska, Glumovo, 6.iv.1927 (pupa), 10.iv.1927 (emerged adult) (CNC).

This subspecies was described only from the female. The number of specimens was not clearly indicated, but Baranov cited the dates 6.iv. and 10.iv.1927 near the beginning of the Croatian description (p. 257) and 12.iv.1927 at the end, implying more than one specimen (although in the abbreviated German description on p. 270 he mentioned only the date 12.iv.1927). There are four specimens in Baranov's collection in CNC conforming to the sex and various cited dates and these are clearly all original syntypes and are listed above; in addition there is one male specimen from the type-locality (Skopje, Glumovo) but as the male was not described and the specimen has a conflicting date (13.iv.1927) it is not accepted as having any type-status.

This subspecies is not mentioned by Rubzov (1959-1964); we confirm from lectotype examination that it is correctly assignable to *Simulium* Latreille s.str.

Smart (1945 : 505) gives the publication date of this name as 1936 in error.

*Simulium reptans* (Linnaeus), form *ornatoide* Baranov, 1926b : 184, 189. Holotype or syntypes ♂, YUGOSLAVIA: Serbia, Tuman, 12.vi.1925 (lost).

The type-material of this species was preserved in alcohol and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell).

*S. reptans* f. *ornatoide* is not placed by Rubzov (1959-1964). In the absence of type-material the name is enigmatic, but presumably applied without doubt to a species of *Simulium* s.str., in which genus-group segregate *S. reptans* (Linnaeus) belongs.

*Simulium reptans* (Linnaeus), subsp. *pseudocolumbacense* Baranov, 1937a : 255 (Croatian), 269 (German). Holotype ♀, YUGOSLAVIA: Serbia, Golubac, Donau [= R. Danube], 1.v.1936 (CNC).

This subspecies was described from a single specimen (the above-listed holotype) reared from the pupa. Baranov makes it clear that he had only one specimen from statements in both Croatian and German descriptions.

This subspecies is not mentioned by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to *Simulium* Latreille s.str.

Smart (1945 : 512) gives the publication date of this name as 1936 in error.

*Simulium reptans* (Linnaeus), subsp. *pukovacense* Baranov, 1937a : 256 (Croatian), 269 (German). LECTOTYPE ♀, by present designation, YUGOSLAVIA: Macedonia, Pukovac, 23.v.1935 (CNC).

Paralectotypes: 1 ♂, 5 ♀, same data as lectotype (♂, 4 ♀ in CNC; 1 ♀ in BMNH).

This subspecies is not mentioned by Rubzov (1959-1964); we confirm from lectotype examination that it is correctly assignable to *Simulium* s.str.

Smart (1945 : 512) gives the publication date of this name as 1936 in error.

*Simulium reptans* (Linnaeus), subsp. *tumanicum* Baranov, 1937a : 255 (Croatian), 269 (German). Holotype ♀, YUGOSLAVIA: Serbia, Tuman, 16.iv.1926 (CNC).

In the original description Baranov cited one female specimen from Tuman (locality to which the name refers) with date 16.iv.1926, and the specimen with this data in the Baranov collection is certainly the holotype. However it should be noted that CNC collection contains three other specimens of *tumanicum* from Baranov's collection which have no type-status, viz. 2 ♂, Tuman, 9.iv.1926, and 1 ♀, Serbia, Golubac, 13.iv.1926; there is no evidence that Baranov had the male at the time of description, these dates were not cited, and no

specimens were mentioned from Golubac, and we conclude that the specimens lack type-status even though labelled as cotypes by Baranov.

This subspecies is not mentioned by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to *Simulium* Latreille s.str.

Smart (1945 : 515) gives the publication date of this name as 1936 in error.

***Simulium reptans*** (Linnaeus), subsp. ***vardaricum*** Baranov, 1937a : 256 (Croatian), 270 (German). Holotype ♀, YUGOSLAVIA: Macedonia, Skopje, 11.vi.1926 (CNC).

Paratypes: 1 pupal exuvium, same data as holotype, except date 31.vii.1926 (CNC). 1 cocoon, same data as holotype, except date 9.iv.1927 (CNC).

In the original Croatian description Baranov briefly described the larva and pupa of this subspecies from the Vardar River near Skopje, and based the description of the adult female on one specimen reared from the pupa which emerged on 11.vi.1926 and was cited as type. As the pupa of this subspecies was described, as well as the female, we accept the pupal pelt and the empty cocoon standing with the holotype in Baranov's collection as paratypes (see above); they came from the type-locality, but Baranov did not mention dates for his pupal material in the description.

This subspecies is not mentioned by Rubzov (1959-1964); we confirm from holotype examination that it is correctly assignable to *Simulium* Latreille s.str.

Smart (1945 : 515) gives the publication date of this name as 1936 in error.

***Simulium (Nevermannia) serbicum*** Baranov, 1925 : 6, 7 (Serbian), 9 (German). Syntypes ♂, ♀, pupae, YUGOSLAVIA: East Serbia, stream near Vrashegranaz, 21.ix.1924 (not located, probably all lost).

Baranov described this species from one female and three male specimens which had been reared from pupae. The pupae were stated to recall those of small *ornatum*, but to differ by having only four gill filaments. No type-specimen was designated, and the four reared adults plus pupae therefore had syntype status.

In the description of the male Baranov recorded 'Ich besitze nur Alkohol Material'; the alcohol material from Baranov's collection is known to be lost and there is no extant male or pupal syntype material. The one female syntype was not stated to be in alcohol and may have been a pinned specimen, but it, too, appears to be lost. It must be noted, however, that Baranov's list of specimens sold to the Department of Agriculture, Ottawa, in 1954 mentioned one specimen of *serbicum*, and that this specimen was marked off as present in the collection when it was received at Ottawa; the sex was not recorded. Whether this specimen was the single female syntype cannot be ascertained, as the specimen cannot now be found in the Baranov collection in Ottawa; it appears to have been lost, assuming it was in fact received in Ottawa, as records show that no specimen of *serbicum* was sent out on loan from the collection (failure to return a loan specimen therefore does not account for absence of the *serbicum* specimen from Baranov's collection).

Sherban (1951 : 677) reported that he had studied Baranov's 'holotype' of *serbicum* and found that it did not belong to the same species as *serbicum* Baranov in the sense of Rubzov. We are puzzled by this statement, as we do not think it possible that the specimen to which Sherban referred can possibly be an original type-specimen: most of the original material was in alcohol and is known to be lost, there are no Baranov simuliid types existing in Yugoslavia or elsewhere in south-east Europe so far as we know, and Sherban did not see the one specimen of *serbicum* in Ottawa from Baranov's collection (see above paragraph). We have not been able to obtain information from Dr Sherban but we tentatively conclude that the specimen he saw was not one of Baranov's original *serbicum* specimens. It appears instead to have been a specimen from the river Medoviza in Yugoslavia which Rubzov in error considered to be a *serbicum* type, because Rubzov (1962 : 380) in his account of *serbicum* makes the statement 'Typus aus dem Fluss Medoviza (Jugoslawien)'; Rubzov's statement of the type-locality is completely at variance with anything indicated by Baranov, and his 'Typus' cannot in reality, whatever the specimen may be, have any type-status. Sherban mentions

the Medoviza locality and Rubzov's specimen and appears to have confused this with Baranov's 'type'. That Sherban was following Rubzov's interpretation of the 'type' of *serbicum* seems evident from the fact that he repeated Rubzov's (1956 : 521) error of giving *Pseudonevermannia* as the original genus: *serbicum* was actually described by Baranov in *Simulium* (*Nevermannia*), and the description in fact predated the erection of the segregate *Pseudonevermannia* Baranov, 1926.

Shortly after the description Baranov (1926b, 1927a and 1929) placed *serbicum* in *Nevermannia*, regarding the latter as a genus, and aggregated it with *aureum* Fries. *Nevermannia* is now regarded as a synonym of *Eusimulium*, to which segregate *serbicum* (though the type-material is lost) undoubtedly belongs: Baranov's (1925) figure of the male hypopygium and his figure of the branching of the 4-filamented pupal gill (Baranov, 1927a) confirm that the species belongs in the *aureum*-group of *Eusimulium*, where Rubzov (1956 : 521; 1962 : 380) places it.

Smart (1945 : 513) cited *Nevermannia* as the original genus for *serbicum*, whereas the original combination was *Simulium* (*Nevermannia*) *serbicum*. Smart (*op. cit.*), following Enderlein, gave *serbicum* as a synonym of *kerteszi* Enderlein, but this synonymy is not upheld by Rubzov and is almost certainly wrong (the two nominal species correctly belonging in different species-groups).

Živković (1966 : 263), in her account of the *aureum*-group in Yugoslavia, mentions that Sherban considered *serbicum* in the sense of Rubzov to be a misidentification of the true *serbicum* Baranov, and uses the name *Simulium rubzovianum* Sherban (which Sherban, 1961, proposed for *serbicum* of Rubzov, not Baranov) for a valid species of the group; she does not, however, provide any information on the identity of the true *serbicum* Baranov (though almost certainly this name must apply to, and have priority for, one of the Yugoslav species of the *aureum*-group to which she refers).

***Wilhelmia equina*** (Linnaeus), form ***prima*** Baranov, 1926b : 184, 185. LECTOTYPE ♂, by present designation, YUGOSLAVIA: Serbia, Tuman, lower Danube ('untere Donau'), 23.vi.1924 (CNC, with pupal exuvium).

Paralectotypes: 1 ♀, YUGOSLAVIA: Serbia ('Ost-Serbia'), Tuman, 12.vi.1925 (CNC). 3 ♂, 4 ♀, YUGOSLAVIA: Serbia, Tuman, 9.vi.1925 (CNC).

There is some confusion in Baranov's collection concerning the true type-material of this nominal taxon, for the collection contains specimens that cannot be types although labelled as such by Baranov and at the same time contains specimens that we believe to be types though not labelled as such. Detailed annotation is therefore necessary.

Form *prima* of *equina* is a nominal species-group taxon of which the syntypes are the original male, female, pupal and larval specimens very briefly described by Baranov from specimens obtained at Tuman and Treska; the only information in the original description concerning locality and date is contained in Baranov's statement 'Ich sammelte sie massenhaft im Juni in Tuman (Serbien) und im August-September in Treska (Mazedonien)'. In practice Baranov used the name *prima* for what would now be referred to as the typical or nominate form, so that his *equina prima* is synonymous with the entity we would now call *equina equina*. His collection in CNC contains specimens standing under the name *Wilhelmia equina* and others named as *equina* form *prima*, but we believe that some of the true original syntypes of *prima* are contained among the specimens named simply as *equina* (not surprising in view of the fact that Baranov's typical *equina* concept was the same as *prima*), and that his specimens named as types of *prima* can have no such status.

The specimens named and labelled as types of *prima* were all collected *after* the date of publication of the name (March, 1926), and therefore cannot be original syntypes in spite of Baranov's labels; furthermore they were all collected at Skopje, which is not one of the cited original localities. In all they are comprised as follows: 1 ♂, 1 ♀, Skopje, Vardar River, 7.xi.1926; 1 ♀, Skopje, 8.ix.1926; 1 ♀, Skopje, 4.xi.1926. We consider all of these specimens to be later collected material erroneously labelled as types.



Among the material named simply as *equina*, however, we have found nine specimens from Tuman (one of the originally cited type-localities) that bear collecting dates June, 1924, and June, 1925, and we believe that these specimens (which must have been available to Baranov at the time of description of *prima*) represent part of the original *prima* type-material; their data fits with Baranov's statement 'im Juni in Tuman' and they were collected well before the publication date of the name. Accordingly we accept these nine specimens as original syntypes and designate a lectotype from them (see above, where full data of the lectotype and remaining syntypes, i.e. paralectotypes, are indicated).

The *equina* material in Baranov's collection contains nine female specimens from Treska (the other type-locality that Baranov cited), but as all have data post-dating publication none of them are syntypes of *prima*. We have not located any adult syntypes from this locality, and these we believe lost; Baranov's larval and pupal material is also presumed lost except for the pupal exuvium of the lectotype and of two of the paralectotypes.

*W. equina* f. *prima* is not mentioned by Rubzov (1959-1964). The name was clearly used by Baranov for the typical or nominate *equina* and is therefore to be treated as a synonym of *equina* Linnaeus, a species-group taxon of the genus-group segregate *Wilhelmia* Enderlein. This is here confirmed from examination of the lectotype. The name is a primary homonym of *prima* Baranov (form of *Wilhelmia stylata*), and a secondary homonym in *Simulium* s.l. of *prima* Baranov (1926b, forms of *aurea* Fries, *ornata* Meigen and *ruficornis* Baranov).

*Wilhelmia equina* (Linnaeus), form *quarta* Baranov, 1926b : 184. LECTOTYPE ♂, by present designation, YUGOSLAVIA: Serbia, Golubac, e [sic] vi.1924 (CNC).

Paralectotype: 1 ♂, same data as lectotype (but label with capital 'E') (CNC).

Smart (1945 : 512) cites p. 186 in Baranov (1926b) for the original description of this form but differentiating features of *quarta* are not clearly stated on this page, and the availability of the name rests upon Baranov's entry in the key on p. 184, where the form is differentiated by its pale legs. Baranov did not indicate the sex and presumably his statement of 'Beine hell' is meant to apply to both sexes; he certainly also had larvae and pupae at the time of description as the immature stages of forms *quarta*, *secunda* and *tertia* are referred to on p. 186.

The only existing specimens that can be considered original syntypes are the two males recorded above as lectotype and paralectotype. Baranov did not cite any localities for *quarta* but on p. 184, before the key, he mentions that the paper as a whole is based on specimens from north-east Serbia and from the surroundings of Skopje; the specimens from Golubac (north-eastern Serbia) were collected in June, 1924, and can therefore be considered original syntypes because of agreement of both locality and date with the publication. But the Baranov collection in CNC also contains two ♀ specimens from Skopje, with dates 3.xi.1926 and 4.xi.1926 respectively, which have no type-status (although they come from a cited type-locality); the original description was published in March, 1926, and these females collected in November, 1926, cannot therefore be syntypes.

*W. equina* f. *quarta* is not placed by Rubzov (1959-1964); we confirm from lectotype examination that it is correctly assignable to the genus-group segregate *Wilhelmia* Enderlein.

*Wilhelmia equina* (Linnaeus), form *secunda* Baranov, 1926b : 184. Syntypes ♂, ♀, pupae, larvae, YUGOSLAVIA (locality and dates uncertain) (lost).

The type-material of this form was preserved in alcohol and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell). It is clear from Baranov's statements on p. 186 of the original work that he knew the larval and pupal stages as well as the adults differentiated in the key on p. 184 (the availability of the name rests on this entry, not on p. 186 cited for the original description by Smart (1945 : 513)).

Rubzov (1962 : 412) places *Wilhelmia secunda* Baranov as a valid species, says that the aquatic stages are unknown ('Wasserbewohnende Stadien unbekannt') and says that the principal form ('Stammform') is from the Danube. In the absence of any statement of locality for *W. equina* f. *secunda* and with the loss of the type-material there is no evidence

that firmly substantiates Rubzov's placement and statements; certainly the early stages were known to Baranov at the time of description, as on p. 186 of the work containing the description he wrote (under the heading '2-4. *Wilhelmia equina secunda, tertia und quarta* ff.nn.') 'Sie haben *prima*-ähnliche Larven. Die Puppen sind mit Besonderheiten in Tubenbau. Alle drei Formen haben kürzere und dickere Tuben als *prima*'.

The name *secunda* is a primary homonym of *prima* Baranov (form of *Wilhelmia stylata*), and a secondary homonym in *Simulium* s.l. of *secunda* Baranov (1926b, forms of *aurea* Fries, *ornata* Meigen and *ruficornis* Baranov). All five uses of the name *secunda* were published by Baranov (1926b) in the same work; as one of these, viz. *secunda* as form of *equina*, has been adopted as the valid name of a supposed species by Rubzov (1956 : 570; 1962 : 412) we accept this use of the name as determining the senior homonym.

***Wilhelmia equina*** (Linnaeus), form *tertia* Baranov, 1926b : 184. Syntypes ♂, ? ♀, pupae, larvae, YUGOSLAVIA (locality and date uncertain) (lost).

The type-material of this form was preserved in alcohol and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell). It is clear from Baranov's statements on p. 186 of the original work that he knew the larval and pupal stages as well as the adult male (the male is differentiated in the key on p. 184 and the availability of the name rests on this entry, not on p. 186 cited for the original description by Smart (1945 : 514)); there is no mention of the female, and it is not certain whether there were females in the type-material. There is no indication in the description of the type-locality or dates of the original material.

Rubzov (1962 : 401) places *Wilhelmia tertia* Baranov as a valid species, and states (*op. cit.* : 402) 'Typus aus der Donau, von uns nicht gesehen'. We know of no evidence, and there is none in the original description, that the Danube was the type-locality though this is certainly possible, for the river borders north-eastern Serbia which was one of the areas mentioned rather vaguely by Baranov (1926b) in his introductory remarks. According to Rubzov the aquatic stages are unknown, but they were certainly known to Baranov at the time of description, for under the heading (p. 186) '2-4. *Wilhelmia equina secunda, tertia und quarta* ff.nn.' he wrote 'Sie haben *prima*-ähnliche Larven. Die Puppen sind mit Besonderheiten in Tubenbau. Alle drei Formen haben kürzere und dickere Tuben als *prima*'.

***Wilhelmia stylata*** Baranov, 1926b : 184, and ***W. stylata*** Baranov, form *prima* Baranov 1926b : 184, 186. Syntypes ♂, YUGOSLAVIA: Macedonia, Treska (lost).

The situation with these names and with *W. equina* f. *secunda* exactly resembles that with *Odgmia ruficornis* Baranov and its forms. Baranov's (1926b) description of *stylata* and its two forms is confused, and some discussion is necessary. The availability of these names rests upon the entry in the key on p. 184 of the original publication and on the descriptive matter on p. 186. The key entry reads:

'7 (10) Adminiculum mit Griffel. Bürste unfrei . . . *stylata* n.sp.

8 (9) Beine fast ganz dunkel . . . *stylata prima* n.f.

9 (8) Beine teilweise hell . . . *stylata se[c]unda* n.f.'

and the 'descriptive' entry reads:

'5-6. *Wilhelmia stylata prima und secunda* ff.nn. Ich habe nur wenige Exemplare, welche ich aus in Treska gesammeltem Material züchtete. Ich kenne nur Männchen, die man nur mit Hilfe der Hypopygiumpräparation v. *equina* unterscheiden kann (Fig. 2)'.

The numbers 5 and 6 preceding the descriptive matter are serial numbers in a list of Simuliid species (the preceding numbers 2-4 referring to *Wilhelmia equina* forms *secunda, tertia und quarta*, and the succeeding number 7 referring to *Wilhelmia brnizensis*). It is evident therefore that Baranov was proposing two separate taxa only (No. 5 and No. 6) differing only in detail of leg colouring as indicated in the key but together forming the new species *stylata* distinguished by its adminiculum. From this it is plain that form *prima* was intended to be the typical or nominate form, and therefore that *stylata* and *prima* are nomenclaturally one and the same taxon, having the same type-material. In fact the type-material of this taxon,



*stylata* = *prima*, was preserved in alcohol (except for the genitalia preparation mentioned by Baranov) and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell). The genitalia slide(s) are also presumably lost.

Smart (1945) cites p. 185 for the original description of *stylata* and its forms; this is in error and details of these taxa appear on pp. 184 and 186.

Rubzov (1962 : 407) places *Wilhelmia stylata* Baranov as a synonym of *Wilhelmia lineata* (Meigen). This is accepted as correct in the absence of any evidence to the contrary.

The name *prima* is a primary homonym of *prima* Baranov (form of *Wilhelmia equina*), and a secondary homonym in *Simulium* s.l. of *prima* Baranov (1926b, forms of *aurea* Fries, *ornata* Meigen and *ruficornis* Baranov).

*Wilhelmia stylata* Baranov, form *secunda* Baranov, 1926b : 184, 186. Syntypes ♂, YUGOSLAVIA: Macedonia, Treska (lost).

The type-material of this form was preserved in alcohol and was lost in Vienna at the end of the war (Baranov i.litt. to Shewell). As Baranov mentioned the ♂ hypopygium (see discussion under *stylata* above) there were presumably also slides of this structure, but these too are presumed lost.

Rubzov (1959-1964) does not mention this name, but treats *stylata* as a synonym of *Wilhelmia lineata* (Meigen); by implication *secunda* is also a synonym of *lineata*. *W. stylata* f. *secunda* is a primary homonym of *secunda* Baranov (form of *Wilhelmia equina*), and a secondary homonym in *Simulium* s.l. of *secunda* Baranov (1926b, forms of *aurea* Fries, *ornata* Meigen and *ruficornis* Baranov).

It should be noted that on p. 184 of the original publication the name *secunda* is mis-spelt '*seunda*' by typographical error, and that Smart (1945 : 513, 514) cites p. 185 for the original description in error.

#### BIBLIOGRAPHY

*Note:* The following bibliography contains a complete list of Baranov's papers on Simuliidae, although it has not been necessary to cite all of them in the foregoing text. Most of Baranov's papers are in Serbian (Cyrillic alphabet) or Croatian (Roman alphabet) and the treatment of the titles of these differs slightly in the following bibliography according to the language used: titles in Serbian are given in English translation only, titles in Croatian are given in the original and followed by an English translation in square brackets. Baranov used six languages in his papers and their summaries in various combinations, so we have thought it useful to append a note of the language(s) used in each publication. In most publications he used the 'v' ending for his name, but occasionally used 'ff'; we cite all his papers under the spelling Baranov. For exactly half of the papers of which Baranov was author or co-author (17 out of 34 publications) there are short English abstracts in the *Review of Applied Entomology*, Series B (Medical and Veterinary); these provide helpful digests for many of the papers published in the rather difficult Serbo-Croat language, and we have cited the references to the *R.A.E.* abstracts (using this abbreviation) at the end of the relevant Baranov references.

- BABIĆ, I., BARANOV, N. & GANSLMAYER, R. 1935. Die Kolumbatscher-Mücke im Jahre 1934. *Arch. wiss. prakt. Tierheilk.* **69** : 205-212. [German: English abstract in *R.A.E.* (B) **23** : 275].

- BARANOV, N. 1924. 'Golubachka mushitsa' (*Simulium columbaczense* sensu latiore.). *Glasn. Minist. Poljopr. i Voda* 2 (7) : 55-68. [Serbian with English summary: English abstract in *R.A.E.* (B) 13 : 50].
- 1925, with Radosavljević. See Radosavljević, D. M. & Baranov, N.
- 1925. Neue Dipteren aus Serbien. *Poljopr. ogled. kontr. Stanitsa Topčider*. No. 1 : 1-11. [Serbian and German: English abstract in *R.A.E.* (B) 13 : 50].
- 1926a. Eine neue Simuliiden-Art und einige Bemerkungen über das System der Simuliiden. *Neue Beitr. syst. Insektenk.* 3 : 161-164. [German: English abstract in *R.A.E.* (B) 15 : 12].
- 1926b. Über die serbischen Simuliiden. *Neue Beitr. syst. Insektenk.* 3 : 183-194. [German: English abstract in *R.A.E.* (B) 15 : 78].
- 1927a. Guide for the identification of Simuliid larvae. *Glasn. cent. hig. Zav., Beogr.* 2 (3) : 93-96. [Serbian with German summary: English abstract in *R.A.E.* (B) 15 : 212].
- 1927b. The larval development of some Simuliids. *Glasn. cent. hig. Zav., Beogr.* 2 (3) : 97-104. [Serbian with German summary: English abstract in *R.A.E.* (B) 15 : 212].
- 1927c. Guide for the identification of Simuliid pupae. *Glasn. cent. hig. Zav., Beogr.* 2 (4) : 91-93. [Serbian with German summary].
- 1927d. Some morphological characters of the family Simuliidae and their importance in the classification of this family. *Glasn. ent. Društ. [Acta Soc. ent. jugosl.]* 2 : 19-25. [Serbian with German summary]. [Title only in *R.A.E.* (B) 16 : 192].
- 1928. On a biological method of control of the Golubatz fly. *Jugosl. vet. Glasn.* 8 (5) : 137-138. [Serbian].
- 1929. O radnji Schönbauer-a, o golubačkoj mušici i o fauni srpskih simuliida [On the work of Schönbauer, on the Golubatz fly and on the Serbian simuliid fauna]. *Jugosl. vet. Glasn.* 9 (10) : 305-307. [Croatian].
- 1929, with Chorine. See Chorine, V. & Baranov, N.
- 1934. Golubačka mušica u godini 1934 [The Golubatz fly in the year 1934]. *Vet. Arh.* 4 (8-9) : 346-393. [Croatian with Russian summary: English abstract in *R.A.E.* (B) 22 : 203].
- 1935a. K poznavanju golubačke mušice II. [Contribution to knowledge of the Golubatz fly II]. *Vet. Arh.* 5 (2-3) : 58-140. [Croatian with Russian summary: English abstract in *R.A.E.* (B) 23 : 161].
- 1935b. Neues über die Kolumbatscher-Mücke. (*Simulium columbaczense* Schönb.) *Arb. morph. taxon. Ent. Berl.* 2 : 156-158. [German: English abstract in *R.A.E.* (B) 23 : 275].
- 1935c. Die Kolumbatscher-Mücke im Jahre 1934. *Arch. wiss. prakt. Tierheilk.* 69 : 205-212. [German].
- 1936a. K poznavanju golubačke mušice III [Contribution to knowledge of the Golubatz fly III]. *Vet. Arh.* 6 (3-4) : 137-220. [Croatian with Russian summary]. [Title only in *R.A.E.* (B) 26 : 40].
- 1936b. Studien an pathogenen und parasitischen Insekten IV. *Simulium* (*Danubiosimulium*) *columbaczense* Schönb. en Yougoslavie. *Arb. parasit. Abt. Inst. Hyg. Zagreb* No. 4 : 1-36. [French: English abstract in *R.A.E.* (B) 24 : 276].
- 1936c. Sadašnje stanje problema suzbijanja golubačke mušice [The present position in the problem of Golubatz fly control]. *Jugosl. vet. Glasn.* 16 (10) : 524-527. [Croatian].
- 1937a. K poznavanju golubačke mušice V [Studij epidemiologije golubačke mušice na invaziji g 1936.] [Contribution to knowledge of the Golubatz fly V (Epidemiological study of the Golubatz fly in the year 1936)]. *Vet. Arh.* 7 (5) : 229-276. [Croatian with German summary and descriptions: English abstract in *R.A.E.* (B) 25 : 249].
- 1937b. Die Kolumbatscher Mücke in Jugoslawien im Jahre 1937. *Arch. wiss. prakt. Tierheilk.* 72 : 158-164. [German: English abstract in *R.A.E.* (B) 26 : 33].
- 1938a. K poznavanju golubačke mušice VI (Studij golubačke mušice i njezinih sinbiocenonta) [Contribution to knowledge of the Golubatz fly VI (Study of the Golubatz fly and its synbiocenonts)]. *Vet. Arh.* 8 (7) : 313-328. [Croatian with German summary: English abstract in *R.A.E.* (B) 26 : 214].

- BARANOV, N. 1938b. Die Kolumbatscher Mücke (*Danubiosimulium columbacense* Schönb.). *Z. hyg. Zool.* **30** : 161-178. [German]. [Title only in *R.A.E.* (B) **26** : 224].
- 1938c. Prilog poznavanju prirodnih neprijatelja golubačke mušice iz klase insekta. [Contribution to knowledge of the natural enemies of the Golubatz fly from the class Insecta]. *Arh. Minist. Poljopr.* **5** : 106-115 (reprint pagination 1-12). [Croatian with German summary; English abstract in *R.A.E.* (B) **27** : 15].
- 1939a. K poznavanju golubačke mušice VII (Biološka svojstva golubačke mušice i njezine seobe u g. 1938) [Contribution to knowledge of the Golubatz fly VII (Biological peculiarities of the Golubatz fly and its dispersal in the year 1938)]. *Vet. Arh.* **9** (3) : 105-125. [Croatian with German summary; English abstract in *R.A.E.* (B) **27** : 85].
- 1939b. La mouche de Goloubatz. *Bull. Off. int. Épizoot.* **18** : 311-322. [French].
- 1939c. Stand der Kolumbatscher Mückenforschung in Jugoslawien. *Z. ParasitKde* **11** : 215-234. [German; English abstract in *R.A.E.* (B) **29** : 47].
- 1939d. *Odagnia ornata barenensis* subsp. nova i njen parazit *Megaselia brevissima* Schmitz. [*Odagnia ornata barenensis* subsp. n. and its parasite *Megaselia brevissima* Schmitz]. *Vet. Arh.* **9** (11) : 599-601. [Croatian with German summary].
- 1939e. *Report of work on research and control of the Golubatz fly in the years 1934-1938.* Publication of Moravian Ban's Administration, Niš [Yugoslavia], 48 pp. [Serbian]. [This is a printed and illustrated report issued by the regional governor (Ban) of Moravia, most of which was written by Baranov (as indicated in the foreword) although his name does not appear on the individual parts for which he was responsible. These, all in Serbian, are: pp. 21-28, 'Losses from the Golubatz fly'; pp. 29-34, 'Instructions for the collection of material'; and pp. 35-48, 'Instructions for the observation of simuliids'. The work contains a coloured plate, between p. 42 and p. 43, of the male, female, pupa, eggs, and larva of the Golubatz fly.]
- 1941. The Golubatz fly—on the history of the Golubatz fly. *Poljopr. Glasn.* [Novi Sad] **21** (5) : 2-4. [Serbian].
- 1942a. *Boophthora argyreata* Mg. u okolini Zagreba [*Boophthora argyreata* Mg. in the neighbourhood of Zagreb]. *Vet. Arh.* **12** (5) : 209-211. [Croatian with German summary].
- 1942b. Die mörderische 'Donau-Mücke'. *Donauzeitung*, issue 14th October 1942. [German: newspaper article on Golubatz fly including photograph of Danube river at Golubatz, figure of female of Golubatz fly, and map of Europe showing outbreak area, printed in German-language newspaper in German-occupied Yugoslavia.]
- & NEZIĆ, Z. 1940. On the Golubatz fly in the year 1940. Account of laboratory work for investigation of the Golubatz fly at Golupcu for the year 1940. *Jugosl. vet. Glasn.* **20** (11) : 410-414. [Serbian].
- CHORINE, V. & BARANOV, N. 1929. Sur deux champignons parasites d'*Anopheles maculipennis* Mg. *C. r. Séanc. Soc. Biol.* **101** : 1025-1026. [French; English abstract in *R.A.E.* (B) **17** : 247]. [Paper contains a reference to a fungus isolated from the larva of *Simulium ornatum* Mg.]
- RADOSAVLJEVIĆ, D. M. & BARANOV, N. 1925. Plant diseases and pests of the Timok valley [Serbia] in 1924. Work of the phytopathological section of the experiment and control station in Topčider. *Glasn. Minist. Poljopr. i Voda*, pts. 8-11 : 96-119. [Serbian]. [This paper is in two sections. The second section, beginning on p. 109, is entitled in Serbian 'II. Injurious insects of the Timok valley in the year 1924' and contains reference to the Golubatz fly on p. 109. The end of the paper contains a map (Map No. 2) of the distribution of Simuliidae in east Serbia.]
- RUBZOV, I. A. 1956. *Fauna SSSR* (N.S.) No. 64, Diptera **6** (6) Simuliidae, 860 pp. [Russian]. Moscow & Leningrad.
- 1959-1964. Simuliidae (Melusinidae) in Lindner, *Fliegen palaearkt. Reg.* **14** : 1-689. [German].
- 1962. See 1959-1964 above.
- 1963. See 1959-1964 above.



- SABROSKY, C. W. & CROSSKEY, R. W. 1969. The type-material of Tachinidae (Diptera) described by N. Baranov. *Bull. Br. Mus. nat. Hist. (Ent.)* **24** : 27-63.
- 1970. The type-material of Muscidae, Calliphoridae, and Sarcophagidae described by N. Baranov (Diptera). *Proc. ent. Soc. Wash.* **72** : 425-436.
- SHERBAN, E. 1961. New and little-known species of black-flies of the *Eusimulium aureum* Fries group (Diptera, Simuliidae) from Rumania. *Ent. Obozr.* **40** : 677-685. [Russian with English summary]. [For English translation see *Ent. Rev., Wash.* **40** : 373-377].
- SMART, J. 1945. The classification of the Simuliidae (Diptera). *Trans. R. ent. Soc. Lond.* **95** : 463-532.
- STONE, A. 1963. An annotated list of genus-group names in the family Simuliidae (Diptera). *Tech. Bull. U.S. Dep. Agric.*, No. 1284, 28 pp.
- ŽIVKOVIĆ, VERA. 1966. Les simulies (Diptera, Simuliidae) du groupe *aureum* en Yougoslavie. *Acta vet., Beogr.* **16** : 257-264. [Croatian with French title and abstract].

# INDEX TO SPECIES-GROUP NAMES

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